



PLAN REVIEW CHECKLIST

All engineers and architects involved in the design of the structure are to seal the related sheets of plans, details and calculations in accordance with the rules of the State Board of Technical Registration.

Provide two copies of all applicable drawings. All corrections and revisions shall be made on original tracings or finished reproducible set (do not cloud or provide revision numbers on plans that have not been issued a permit yet). Pen or pencil corrections on final prints will not be acceptable.

DIRECTORY

Site Plan requirements
Floor Plan requirements
Foundation Plan requirements
Structural Plan requirements
Elevation Plan requirements

Section views / Detail requirements
Electrical Plan requirements
Plumbing Plan requirements
Mechanical Plan requirements
Outdoor Lighting / Energy requirements

GENERAL:

□ Code reference: 2006 IRC / 2006 UPC □ Neat, organized, and legible (min. ¹/₈" lettering).

☐ Specify each scale used

Floor plan scale: ¼" = 1"
Detail scale: ¾" = 1"

□ Provide consecutive sheet numbers on each construction drawing, R106.1.1.

SITE PLAN: (NOT REQUIRED FOR MODEL PLANS)

- □ Location of utility lines and meters from property line to building, R106.1.1.
- □ Specify overhead or underground electrical service. Overhead service for new construction requires an appeal to the Building Official, IBC amendment section 111.1.1.
- □ Provide gas piping for structure or submit exemption documentation, Arizona Statute 30-809.
- □ Dimensions of all structures on site, distances from property lines to structures, square footage calculations, and locate any unique topographical areas.

Top

FLOOR PLANS:

- □ Label all rooms and spaces. Show floor plan for all rooms adjoining additions.
- □ Provide natural light (8%) into all habitable rooms, R303.1.
- □ Provide natural ventilation for adjacent rooms (4%), or approved mechanical ventilation. R303.1
- ☐ Identify ceiling heights in all areas. Note average height at sloped ceiling areas, R305.1.
- Specify thermal barrier protection from rigid foam on gable ends per R314.5.3.
- □ Show the location of attic access min. 22"x30", R807.
- □ Show fireplace location, hearth size and materials, R1001 or R1004. Provide fireplace cut sheets or note the requirement for deferred submittal approval prior to installation.
- □ Water closet location: not less than 30" wide and 24" in front, UPC 407.6.
- □ Tub/shower enclosures require nonabsorbent wall surface min. 6' above the floor and fiber-cement board backing, R307.2, R702.4.2.

Doors and Windows

- ☐ Show location and size of all doors and windows.
- Provide all window types, and designate the operable portion of windows.
- □ Provide egress from bedrooms, R310

- Max sill height = 44",
- Min. clear opening = 24"H x 20"W @ 5.7sq. ft net (5 sq. ft 1st floor)
- □ Location of tempered glass, R308.4.
 - Within: 18" of the floor, 24" of doorways, less than 60" above tub/shower floors
 - Adjacent to stairways and landings (36" of a walking surface, less than 60" above)
- One exit door shall be side hinged not less than 3' wide, R311.4.2.
- ☐ Show locations of skylights (dashed lines) on floor plan. ICBO # on all skylights over 2' by 4'.

Garage

- □ Door from a garage: 20-minute self-closing, self-latching, Amendment section 309.1.
- Openings from a garage directly into sleeping rooms are not permitted, R309.1.
- Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 5/8" type X gypsum board or equivalent, and ½" gypsum board on supporting walls, R309.2.
- Provide ½" gypsum board on all walls common to the garage and house in compliance with R309.2.
- □ Show the direction of slope for the garage floor, R309.3.
- ☐ Gas appliances (and electric water heaters) installed in garages shall be mounted on platforms at least 18" above the floor, M1307.3.

Stairs

- The walls and soffit of the enclosed space under stairs shall be protected on the enclosed side with 1/2" gypsum board, R311.2.2.
- □ Provide details and dimensions for stairways. (36" width min, 10" min. tread depth, 7 ¾" max. riser height, R311, R312.
- □ Provide a handrail for stairways of four or more risers, R311.5.6.

Fire separation

- □ Exterior walls with a fire separation distance less than 3 feet shall have not less than a one-hour fire-resistive rating with exposure from both sides. Projections shall not extend to a point closer than 2 feet from the line used to determine the fire separation distance. Projections extending into the fire separation distance shall have not less than one-hour fire-resistive construction on the underside, 2006 Amendment R302.1.
- ☐ Individual dwelling units in duplexes must be separated by a 1-hour firewall from floor to bottom of roof sheathing, R317.1.
- Townhouse parapets shall have the same fire-resistance rating as that required for the supporting walls with a height not less than 30" above the roof, R317.2.3.

Top

FOUNDATION PLANS:

- □ Provide a note for termite treatment, R320 as amended.
- □ Note grade away from foundations shall fall min 6" within the first 10', R401.3.
- □ Note soil bearing pressure used in the design of the footings, Table R401.4.1
- □ Note top of foundation to be extended 12" plus 2% (of distance between front face and curb) above the street gutter, R403.1.7.3.
- □ Cross-reference all details to the foundation plans.
- □ Landing or floor surface required at all exterior doors, R311.4.3.
- □ Specify thickness of slabs.
- □ Location for all footings:
 - Fireplaces
 - Sunken or raised areas
 - Stair pads
 - Girder truss / Posts or columns
 - Interior bearing walls
- Specify and locate all foundation hold-downs (at end studs) for alternate brace wall panels, R602.10.6.
- All exterior framed walls require continuous concrete footings min. 12"wide x 12" below grade with treated sill plates and anchor bolts per R319.1 & R403.1.6 (including carport and porch enclosures).

- □ Note on the drawing that pre-stressed or post-tensioned slabs shall be permanently labeled on the slab at the center of the garage door opening as well as with a metal tag indicating 'POST TENSIONED SLAB' permanently attached to the main water shut off valve. A special inspection request must be included with the permit application.
- □ Show location of underground supply and return air ducts.

Top

STRUCTURAL/FRAMING PLANS:

- □ Specify design criteria on plans. Provide values for floor/roof dead and live loads.
- □ Specify lumber grade/species, or manufacturer and series for glue-lams and "I" joists, R802.1.
- ☐ Model plans require separate framing plans to clarify each elevation.
- ☐ Show size, spacing and span of all framing members
 - Trusses, joists, rafters, ledgers
 - Beams, Glue-lams, Lintels, Headers
 - Posts, columns, trimmers and king studs
- Provide a header schedule consistent with Table 502.5(1) or specify size of steel lintels.
- □ Provide sufficient nailing for each framing member, Table R602.3(1).
- □ Provide a complete braced wall panel layout showing panels at the ends (within 12.5') of all wall lines and additional panels centered at least every 25' between, Table R602.10.1. All exterior wall lines shall be braced and parallel interior wall lines shall be braced at intervals not exceeding 35' from exterior wall lines, R403.1.6, R602.10.1.1, R602.10.8.
- □ Specify materials, and provide a nailing schedule for braced wall panels R602.10.6.
- □ Provide a sufficient load path from the roof sheathing to the foundation, R602.10.8.
- □ Continuous structural panel sheathing shall comply with Table R602.10.5. All parallel interior wall lines shall be braced at intervals not exceeding 35' from exterior wall lines, R602.10.1.1.
- □ Provide an engineer's calculation, design, and seal for partition and screen walls exceeding 6' in height above grade on either side, and retaining walls exceeding 4' in height measured from the bottom of the footing to the top of the wall.
- □ When the roof pitch is less than 3:12, design structural members that support rafters and joists as beams (such as ridges, hips, and valleys), R802.3.
- ☐ Truss calculations must be signed, dated and wet-sealed by an engineer who is registered in Arizona.

 Truss calculations shall be cross-referenced to the floor plans. The engineer of record shall review and stamp the truss drawings.
- □ Specify gable-end bracing with connections to the structure, R802.10.3.
- □ Specify eave/overhang length and detail outrigger support.
- □ Location and size of roof drains/scuppers, UPC chapter 11.

<u>Top</u>

ELEVATIONS:

- Specify height above grade for finished floor, windows/doors, exterior walls, rooflines, porches, chimneys, etc.
- ☐ Provide complete drawings of all patio covers, decks, fireplaces and bay windows.
- ☐ Indicate all materials used; stucco, concrete block, glass block, roofing system, siding, veneer, etc.
- Provide an attic space ventilation calculation and note the size and location of all attic vents needed to comply, R806.2.
- ☐ For thin-coat stucco systems, indicate the ICBO #, system name, and vapor barrier, R703.6.
- □ Specify roof slope and roofing type, grade of materials, and method of installation, R905.
 - Tile: Specify weight and ICBO# of concrete or clay-type roofing.
 - Shingle: two-layer underlayment for low-slope (2:12 to 4:12), R905.2.7.
 - Built-up: min slope 1/4" per foot, R905.9.1.
 - Roll roofing: min slope 1" per foot, R905.5.2.
- □ Chimney: min 2' above any roof point within 10', not less than 3' above penetration, R1003.9.

Top

SECTIONS - DETAILS: ☐ Cross-reference all cross-sections to the floor plan and framing plans. □ Detail footing width, height, and depth (min. 12" into undisturbed soil, R403.1.4), Table R403.1. Footings under braced walls, R602.10.6. Stem walls, Table R404.1.1 (1-4). Sill plates that rest on concrete are required to be decay-resistant, R319.1(2). G' separation of untreated posts or columns above finished grade and 1" above concrete, R319.1.4. • 6" clearance above grade to untreated exterior wood siding, sheathing and exposed wall framing, R319.1 (5). Anchor-bolt spacing, R403.1.6: Minimum ½" diameter / Minimum 7" embedment Maximum 6' o/c and within 12" of each end Quarter-points of alternate braced wall panels, R602.10.6.1 6" minimum foundation height above finished grade (4" with veneer), R404.1.6. Specify water-resistive barrier over wall framing, R703.6.3. □ Siding: Specify material, type of fasteners and spacing and type of vapor barrier, R301.1, R703.6.3. □ Stucco: Show weep screeds with a min. clearance 4" above grade or 2" above paved areas, R703.6.2.1. Veneer: Specify anchoring method, backing, vapor barrier and support (ties spaced max 24" o/c horizontally & vertically, and supporting not more than 2.67sq. ft.), R703.2 & R703.7. □ Show 1" air space between sheathing and veneer R703.7.4.2. □ Completely detail all connections: Double joists parallel to bearing partitions Double joists and trimmer joists at framed openings (roof and floor) Blocking at floor joist ends and bearing walls Trusses to top plate (slotted ties for scissor trusses) Beam to post, post to slab Ledgers to masonry or framing Joist to ledger Continuous load path for shear transfer (roof sheathing to foundation) Stair stringers to wall □ Welded connections require special inspections. If used, a special inspection request must be included with the permit application, UAC306.1.5. Specify all hardware used by type, size and required attachment to framing members (Straps, clips, anchors, hangers, post caps and bases) ☐ Provide draft-stopping at concealed spaces (walls, partitions, furred spaces, ceiling and floor levels, around vents, chimneys/fireplaces, stairs, etc.) R602.8. □ Show the required joist/rafter bearing contact to supporting members, R502.6 & R802.6. Detail non-bearing interior wall conditions (floor and rafter/joist connections & gaps). ☐ Detail all over-framing connections for intersecting pitched roof assemblies. Provide a minimum opening of 22" by 30" for access and ventilation between over-framed assemblies (>30 S.F.), R807. Specify wall and ceiling covering. Note: Ceiling gypsum board must be either 5/8" or ½" sag resistant when applied to ceilings framed at 24" o/c, IRC table R702.3.5 footnote d. Eave vents require min. 1" clearance between ceiling insulation and roof sheathing, R806.3. **Masonry construction** Show wood beams with 1/2" end clearances from masonry on top, end, and sides, R319.1(4). □ Specify all beam seats. □ Note and specify the size, spacing and length of anchor bolts for top plates and ledgers, R606.11.

Specify all ledger connections to masonry walls (3x ledger material required), Figure R606.11(1).

□ Specify lateral support of masonry walls, R606.9.

Moisture barriers required between supporting foundations and earthen walls (adobe). 30# felt, or equivalent moisture resistant barrier, IRC Amendment R614.3.1.

□ Chimney crickets, R1003.20.

☐ Masonry fireplaces: dimensions, sections, and firebox plan. State the size of the flue and hearth.

Basement walls require engineered design.

Top Continued

ELECTRICAL PLANS:

- □ Electrical work shall comply with 2006 IRC chapters 33 42.
- □ Provide an electrical riser diagram with grounding method and bonding to metallic piping, E3303, E3507. Show an underground service entrance on the Riser Diagram or complete the Underground Electrical Service Wavier form
- ☐ Gas lines shall not be used as the primary grounding method, E3508.
- Provide riser diagrams for sub-panels with feeder conductors, conduit sizes, and over-current protection (with appropriate correction factors), E3605.5.
- ☐ TEP requires a 2½" diameter service conduit, TEP SR-305.
- TEP requires meters and associated equipment to be relocated from under patios when the service is upgraded or the area is enclosed, TEP SR-405.L.
- □ Provide equipment rated for 22,000 AIC short circuit protection when the underground cable length is less than 45 feet, 2006 Electric Service Requirements TEP SR-510.
- ☐ Electrical drops over buildings must meet service standards by TEP and E3504.2.
- □ Provide electrical load calculations for determining the service panel size, E3502.2.
- □ Provide feeder load calculations for sub-panels (40% demand factor may not be applied), E3604.3.
- □ Provide a panel schedule: panel size, circuit numbers, ampacity, and wire sizes, E3304.11, E3606.2.
- ☐ Use Table E3602.13 for sizing 15, 20 & 30 AMP branch circuit conductors.
- ☐ Use Table E3605.1 (60 degree C column) for sizing branch circuits and conductors rated <100 amps.
- □ For single-family dwellings, the service shall not be rated less than 100 amperes, E3502.1
- □ Accessory structures, with electricity, shall have no less than 60 amperes, E3502.1.
- □ Show the location of the panel with a 30"W x 36"D clear working space, E3305.2, E3501.6.2.
- □ Provide a readily accessible service disconnect for each dwelling unit (no more than 6 switches) E3501.6.2, E3501.7.
- □ Panelboards may not be located in clothes closets or bathrooms, E3305.4.
- □ Show locations of smoke detectors (every sleeping room and hallways leading to). All smoke detectors must be interconnected with a power source from the building wiring, and shall be equipped with battery backup. When ceiling finish materials are not removed, existing bedrooms may be equipped with battery operated smoke detectors, R313.
- □ Smoke detectors are required in existing buildings when interior alterations occur, R313.2.1.
- Designate the circuit number for each light fixture, receptacle, appliance, and equip disconnect, F3603.5
- □ Cables shall be protected with conduit where subject to physical damage, E3702.3.2.
- ☐ Indicate location of all mechanical equipment disconnect switches, E4001.5.
- □ At least one wall switch controlled light or outlet must be provided in bathrooms, hallways, stairways, attached garages, outdoor entrances or exits, and all habitable rooms, E3803.3.
- ☐ Lights installed over a shower or bathtub must be approved for use in wet area, E3903.8.
- Note that light fixtures in clothes closets shall be installed in accordance with E3903.11.
- Show receptacle outlets at wall spaces 2' or more so that no point along the wall (excluding door openings) is more than 6' from a receptacle outlet, E3801.2.
- □ Show receptacle outlets at each kitchen counter space wider than 12" so that no point along the wall line is more than 24" from a receptacle outlet, E3801.4.1.
- ☐ Kitchens and dining rooms require two or more 2O-amp small appliance circuits. Such circuits shall be GFCI protected and shall not serve other rooms (except breakfast areas, pantries, etc.), E3801.3.
- □ Island or peninsula counter tops with a long dimension of 24" and a short dimension of 12" or greater shall have at least one receptacle, E3801.4.2.
- □ Laundry rooms require at least one 20-amp circuit that shall serve no other outlets, E3603.3, 3801.8.
- □ Bathrooms require a separate 20-amp circuit with receptacles within 3' of the basin, E3801.6.
- □ Exterior outlets at grade level shall be provided at both the front and back of the dwelling, E3801.7. These outlets shall be GFCI protected E3802.3.
- □ Convenience receptacles and light switches/fixtures shall be provided within 25' of mechanical equipment, E3801.11, E3803.4.
- ☐ Hallways of 10' or more in length require a receptacle, E3801.10.
- Attached garages require at least one GFCI receptacle, E3801.9, E3802.2.

- Outlet boxes must be UL listed and approved (ceiling fans require boxes listed for such use), E4001.6.
- GFCI protection required in bathrooms, kitchens, unfinished basements, garages/carports, exterior receptacles, and within 6' of a wet bar or sink, E3802.
- ☐ Bedroom outlets shall be arc-fault protected (receptacles, lights, and smoke detectors), E3802.12.
- ☐ Transformers (Class 1, 2 & 3) may not be located in clothes closets or attics, E4202.3 Amended. Top

PLUMBING PLANS:

- □ Plumbing shall comply with 2006 UPC with state amendments (AZ State plumbing code). The plans should reference this code, or appeal to the Building Official for alternate design approval.
- □ Note and specify all piping materials, UPC 301.1.1.
- Provide protection of (indoor rated) equipment located outdoors, UPC 508.27.
- Provide pressure and temperature relief valve terminating to the exterior facing down between 6 and 24 inches above grade, UPC 608.5.
- ☐ Fixture unit schedule required for the entire property (including existing) UPC Tables 6-5 and 7-3.
- □ Provide the maximum developed length of water line from the meter the furthest appliance served, and the diameter of the water line, UPC Table 6-6.
- □ Each dwelling unit requires an individual accessible water supply shut off, UPC 605.3.
- □ Water conservation requirements: Water closets = 1.6 gallons per flush, Sinks/ Showerheads = 3 gpm, UPC State Amend. 45-312.
- ☐ Shower and tub/shower combinations that have individual control valves shall be of the pressure balance or thermostatic mixing valve type.
- □ Provide location of hose bibs and note the requirement of backflow preventers, UPC 603.
- ☐ Isometric drawing of DWV system required for multiple stories.
- □ Drainage piping serving fixtures which have flood level rim located below the elevation of the next upstream manhole cover of the public sewer, shall be protected from back-flow of sewage by a backwater valve, UPC 710.1.
- □ Show the size and location of all cleanouts, UPC 707.4, Table 7-6.
 - Two-way cleanout required within 2' from the building at the lower end.
 - Upper terminal cleanouts are required at horizontal branches greater than 5'.
 - Cleanouts are required at the kitchen sink area UPC 707.4 W/ State amendment.
- □ Provide vent sizes, UPC 904.
- □ Provide vent piping through the roof so that the aggregate cross-sectional area shall not be less than that of the largest required building sewer, UPC 904.1.
- □ Details are required for island venting (air admittance valves/Chicago Loops), UPC 909.
- Plumbing vents shall be a minimum of 10 feet away from all air intakes, UPC 906.2.
- □ Show trap arms within acceptable distances from plumbing vents, UPC Table 10-1.
- □ Condensate disposal may not discharge into a plumbing vent, UPC 908.1.
- □ Provide location of sump and sewage ejectors.
- Provide a gas line isometric and size the supply pipe for the connected demand. Include the length of line and BTU demand for each appliance, size of each branch, total demand, and total developed length from meter to the most remote appliance on the system, UPC 1217.0 Table 12-8.
- □ Sleeves are required when a gas line passes through concrete, UPC 1211.1.5.
- ☐ Gas meters shall be located at least 3' from sources of ignition, UPC 1209.6.2(C).
- ☐ Any underground gas piping beneath buildings shall be encased in an approved sealed & vented conduit, UPC 1211.1.6.

Top

MECHANICAL PLANS:

- ☐ Mechanical shall comply with 2006 IRC chapters 12 24.
- □ Provide a heated air source to all habitable rooms capable of maintaining a room temperature of 70 degrees at a point three feet above the floor, R303.8, 310.11.
- □ Provide location of return air ducts and register sizes, M1602. Minimum duct/register size: heat pump or air conditioner 6 sq. in. / 1000 BTU, M1403.1 (1 ton cooling = 12,000 BTU).
- □ Show supply and return ducts with minimum R-8 insulation, R1103.2.1. Continued

- Designate the location, capacity and fuel type of the heating and air conditioning equipment. Designate the locations of each supply register, return air grill and all ductwork.
- ☐ Air intake openings shall be located a minimum of 10' from (any street or alley), or 2 feet below any vent or chimney, R303.4.
- \square Air inlets shall be located a minimum of 10' from vent openings or exhaust outlets unless the outlet is 3 feet above the air inlet, M1602.2.1.
- □ Provide an equipment specification list, M1302.1.
- □ Show location of access, catwalk and working platform for heating or air conditioning equipment located in the attic, M1305.1.3.
- □ Appliances located in a garage or carport require impact protection, M1307.3.1.
- ☐ Show the condensate line and secondary for HVAC unit, M1411.3.
- □ Show dryer vent size and location for venting to exterior (max 25' w/bend reductions), M1502.2, M1502.6.
- □ Show exhaust fan locations for bathroom and kitchen venting to the exterior (min 50 and 100 CFM rating respectively), R303.3, M1507.
- □ Gas appliances shall comply with ARIZONA STATE PLUMBING CODE combustion air requirements or Chapter 17, 2006 IRC. Show compliance for all appliances. Confined spaces require a minimum of two 100 SQ. IN. openings, M1702.2.
- □ Flues connected to more than one appliance shall be not less than the area of the largest connector plus 50% of the additional connectors. Water heater typical 3" flue. Furnace 4" flue. IRC M1805.3.
- ☐ Gas fired water heaters may not be located in a storage closet, M2005.2.
- ☐ Gas fired water heaters located in a bedroom or bathroom requires a sealed enclosure, M2005.2.
- Show a minimum 2' termination above any roof point within 10' measured horizontally and not less than 3' above the point where a chimney (metal pipe) passes through the roof, G2427.5.3.
- Mechanical draft vent systems shall terminate at least 3' above forced air inlets located within 10', G2427.8.

Top

OUTDOOR LIGHTING CODE

- □ Show compliance with City of Tucson Outdoor Lighting Code with an approved lighting calculation in accordance with OLC 3.1.2. Include all exterior fixtures on the property in the calculations.
- Provide cut sheets for all FCO fixtures showing the angle of cutoff, light emissions and fixture wattage. All other fixtures are assumed to be unshielded (non-FCO style).

INTERNATIONAL ENERGY CONSERVATION CODE:

- □ Specify the "R" value of the insulation, as well as the "U" factor and the solar heat gain coefficient of the windows and doors. Tucson is in climate zone 2B. The simplified prescribed energy values for glazing and skylights is U=0.75, ceiling R=30 and walls R=13. Mass wall requirement is R=4 when 50% of insulation is exterior and R=6 when applied interior, N1102.1.
- □ Provide a note requiring the insulation certificate shall be posted in the electrical distribution panel before final inspection, N1101.8.

Top REVISED 8/13/07

Helpful Links:

2006 International Residential Code – City of Tucson amendments:

http://www.tucsonaz.gov/dsd/Codes Ordinances/Building Codes/2006 IRC Amendments.pdf

2006 Uniform Plumbing Code – City of Tucson amendments:

http://www.tucsonaz.gov/dsd/Codes Ordinances/Building Codes/2006 UPC Amendments.pdf

2006 International Energy Conservation Code – City of Tucson amendments:

http://www.tucsonaz.gov/dsd/Codes Ordinances/Building Codes/2006 IECC Amendments.pdf

City of Tucson / Pima County Outdoor Lighting Code:

http://www.tucsonaz.gov/dsd/Codes Ordinances/Tucson_Lighting_Code.pdf